

ABSTRACT OF THE DISCLOSURE

5 A delivery system and method are provided for accurately locating, orienting, and
implanting expandable tissue supporting devices at a lumen junction or bifurcation in a
body lumen. For example, the system may be used to deliver a tissue supporting device to
a bifurcated artery such that, on expansion, the tissue supporting device provides side ports
10 of a specific size and geometry to accommodate bifurcations in the artery. The delivery
system is capable of accurately orienting these side ports both radially and longitudinally
with respect to branch lumen openings of the artery. The delivery system achieves
orientation by utilizing a guide member which is positioned to extend from the side port
feature of the tissue supporting device. The guide member is tracked along a guidewire
which extends into the branch lumen, ultimately orienting the side port of the tissue
supporting device properly at the branch lumen opening. After expansion of the tissue
supporting device, the guide member drops out of the enlarged side port and is withdrawn.